

REMARKS

Applicants thank the Examiner for the Examiner's timely and thorough search of the art and Office Action. No new matter has been entered by this Response. After entry of this Response, Claims 1 – 20 remain pending in the Application.

In the Office Action, the Examiner rejected Claims 1 – 4, 10 – 15 and 20 under 35 U.S.C. 102(b) as being anticipated by Cavanagh et al. (U.S. Patent 3,947,770; hereinafter referred to as “Cavanagh”). According to the Examiner Cavanagh teaches a system and a method for ascertaining angle of arrival of an electromagnetic signal at an antenna structure including a plurality of antenna elements 12, 14 intersecting a common axis (referring to Cavanagh; Abstract and Col. 2, lines 62 – 65) and cooperating to establish 2n sectors, each respective sector or the 2n sectors being defined by two antenna elements of the plurality of n antenna elements and the axis, the signal characteristic indicating the first state on a first side of each respective antenna element of n antenna elements and indicating the second state on a second side of each respective antenna element, combinations of the signal characteristics in each respective sector uniquely identifying the respective sector (FIG. 1, Cavanagh), and an evaluation apparatus coupled with at least two antenna elements of the plurality of n antenna elements, the evaluation apparatus employing the state of the signal characteristic sensed by each of at least two antenna elements to effect the ascertaining angle of arrival to a resolution of at least one respective sector (Cavanagh; Col. 2, lines 3 +).

Applicant respectfully traverses the Examiner's rejection of Claims 1 – 4, 10 – 15 and 20 under 35 U.S.C. 102(b) as being anticipated by Cavanagh. Cavanagh does not anticipate, disclose, teach, show, suggest, infer or in any way render obvious a system or method for ascertaining angle of arrival of an electromagnetic signal as claimed in the present application.

It is important that the Cavanagh invention measure the total vertical electromagnetic field that is incident on an electroexplosive device (EED), from whatever direction the signal may arrive.

Any field intensity indicating device for the protection of EED's must also be able to sum the total resultant field when several electromagnetic sources are radiating from a variety of directions in the vicinity of the EED. [Cavanagh; Col. 1, Lines 27 – 31; emphasis provided]

In keeping with that design objective, Cavanagh consistently and repeatedly teaches away from ascertaining angle of arrival of a electromagnetic signal. Cavanagh's measurement of total vertical incident electromagnetic field without regard to angle of arrival is specifically addressed in the following passages:

The invention relates to a device for omnidirectionally measuring the intensity of a vertical electromagnetic field... [Cavanagh; Col. 1, Lines 1 – 2; emphasis provided]

...it is of great importance to be able to measure ... vertical electric field intensities in which the measurement is omnidirectional ... [Cavanagh; Col. 1, Lines 22 – 25; emphasis provided]

...generates a current in response to the vertical component of the strength of an incident electromagnetic field omnidirectionally ... [Cavanagh; Col. 2, Lines 2 – 4; emphasis provided]

...to provide an output signal independent of the angle of arrival of the incident electromagnetic field ... [Cavanagh; Col. 2, Lines 12 – 14; emphasis provided]

An object of this invention is to indicate ... the total resultant vertical electromagnetic field intensity of an incident electromagnetic field which may radiate from one or several sources, independently of frequency and direction ... [Cavanagh; Col. 2, Lines 24 – 28; emphasis provided]

This loop arrangement insures that incident vertical electromagnetic fields will be detected omnidirectionally, thereby enabling measurement of the total vertical incident electromagnetic field. [Cavanagh; Col. 2, Lines 64 – 68; emphasis provided]

... means for combining the transformer-output voltage signals to provide an output signal independent of the angle of arrival of the incident electromagnetic field ... [Cavanagh; Col. 3, Lines 47 – 50; emphasis provided]

The resulting signal is directly proportional to the total resultant vertical field strength impinging on the antenna and is independent of the frequency and the direction of approach of the impinging field. [Cavanagh; Col. 4, Lines 14 – 18; emphasis provided]

...transformer-output voltages are combined to provide an output signal independent of the angle of arrival of the incident electromagnetic field ... [Cavanagh; Col. 4, Lines 26 – 28; emphasis provided]

Thus, a device has been provided which indicates the intensity of the total resultant vertical electromagnetic field independently of the direction of arrival ... [Cavanagh; Col. 4, Lines 66 – 68; emphasis provided]

Cavanagh does not anticipate, disclose, teach, show, suggest, infer or in any way render obvious a system or method for ascertaining angle of arrival of an electromagnetic signal as claimed in the present application.

Applicant respectfully requests that the Examiner remove the rejection of Claims 1 – 4, 10 – 15 and 20 under 35 U.S.C. 102(b) as being anticipated by Cavanagh.

The Examiner objected to Claims 5 – 9 and 16 – 19 as being dependent upon a rejected base claim but stated that Claims 5 – 9 and 16 – 19 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant appreciates the Examiner's indicating that Claims 5 – 9 and 16 – 19 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, Applicant respectfully submits that independent Claims 1, 12 and 20 are patentable over the art of record. Accordingly, Applicant will not presently rewrite Claims 5 – 9 and 16 – 19 in independent form as suggested by the Examiner.

The Examiner also cited other art as of record in the Office Action: Eggert et al. (U.S. Patent 4,638,320; hereinafter referred to as "Eggert") and Kaminski (U.S. Patent 6,239,747; hereinafter referred to as "Kaminski").

Eggert discloses a spatially distributed "long baseline" direction finding system for determining angle of arrival of an electromagnetic signal.

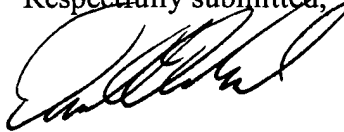
Kaminski discloses a system for determining angle of arrival of an electromagnetic signal that required three spatially separate, triangularly arranged receiving antennas.

Neither Eggert, nor Kaminski nor any combination of Eggert and Kaminski, with or without Cavanagh, anticipates, discloses, teaches, shows, suggests, infers or in any way renders obvious a system and method for ascertaining angle of arrival of an electromagnetic signal that uses a plurality of antenna elements intersecting a common axis and an evaluation apparatus coupled with at least two of the antenna elements employing state of the arriving signal and a characteristic of the arriving signal sensed by the antenna elements to ascertain angle of arrival of the arriving signal, as claimed in Claims 1 – 20.

It is respectfully submitted that Claims 1 – 20 patentably distinguish over the art of record.

Since Applicant has fully and completely responded to the Official Action, this Application is now in order for early action and such early action is respectfully requested. If the Examiner would deem a telephone conference to be of value in expediting this Application, the Examiner is invited to call the undersigned attorney at (972) 758-1955 at the Examiner's convenience.

Respectfully submitted,



Donald D. Mondul

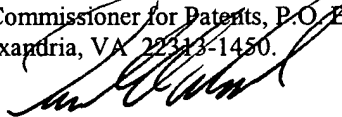
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